ADSL Modem HM121dp/di

User Guide

ERICSSON

Contents Page

1 Introduction

1.1 About this Guide

This User Guide provides general information about the installation of the Ericsson ADSL Modem HM121dp/di in a PC/Windows environment, as well as information about day-to-day use of the modem.

You can learn more about unfamiliar or technical terms by consulting the "Glossary" in this guide.

The following chapters are included in this guide:

- Chapter 1 - "Introduction" provides features of the HM121dp/di as well as a brief description of ADSL and protocol and device driver selection.
- Chapter 2 - "Installation Procedure" describes the steps for installing and connecting the HM121dp/di in a PC/Windows environment.
- Chapter 3 - "Accessing the Internet" provides instructions about how to access the Internet when using either the LAN or WAN device driver.
- Chapter 4 - "Verifying your ADSL Connection" describes how to use the ADSL Modem icon and the Control Panel of the modem to configure and check the performance of the HM121dp/di and the ADSL connection.
- Chapter 5 - "Customizing Communication Settings" provides steps for altering the ATM Virtual Path ID (VPI), ATM Virtual Circuit ID (VCI), Encapsulation type and/or Modulation type values previously defined.
- Chapter 6 - "Uninstalling and Updating Modem Software" describes the procedure for uninstalling the modem software and also how to update to a new version of the modem software.
- Chapter 7 - "Troubleshooting" provides information about how to verify your modem installation and also some tips and solutions for resolving some of the problems that might encounter while installing or using your modem.
- Chapter 8 - "Important Information" provides information about License Agreement and Regulatory Information.
- The "Glossary" includes abbreviations and explanations to technical terms used in this guide.

1.2 About ADSL

The ADSL (Asymmetric Digital Subscriber Line) technology provides high-speed data access across regular phone lines (copper wires) by making use of previously unused frequency bandwidth above the voice band. By placing the ADSL signal above the frequency of the voice signal, ADSL service is able to coexist on the same line with your telephone service. ADSL is symmetric in the sense that it provides a higher data rate in the downstream (receive) direction than in the upstream (transmit) direction. Asymmetric operation is ideal for typical home and small office use where files and information are downloaded more frequently than uploaded.

The HM121dp/di is capable of supporting the following DSL standards: ANSI T1.413 Issue 2, ITU G.992.1 (G.DMT), ITU G.992.2 (G.lite), and ITU G.992 Annexes A, B and C as applicable.

1.3 About the ADSL Modem HM121dp/di

The Ericsson ADSL Modem HM121d comes in two versions: HM121dp and HM121di. Both products offer the same features, but they rely on different types of telephone line in order to provide the ADSL service.

HM121dp offers ADSL service over POTS (Plain Old Telephone System) lines, while **HM121di** uses ISDN (Integrated Services Digital Network) lines to provide the ADSL service.

The HM121dp/di is easily connected to a USB port on the PC via a standard USB cable (supplied). The modem uses power from the PC via the USB cable, which eliminate the need of a power cable and AC adapter. An intuitive self-installation wizard then guides the user step-by-step through the entire software installation process. When new features and updates of the modem's software are available, they may be added by simply loading a new version of the device driver onto the PC.

The main features of the HM121dp/di are listed below:

- Compliant with Universal Serial Bus Specification Revision 1.1.
- USB bus-powered; an external power supply is not required.
- Supports two device drivers: Microsoft NDIS 4.0 WAN Miniport and NDIS 4.0 LAN Miniport.
- Compatible with T1.413 i2, G.DMT, and G.lite compliant CO DSLAM equipment.
- Up to 8 Mbps downstream and at least 640 Kbps upstream for full-rate operation.

Note:

The actual rate depends on the copper category of your telephone wire, distance from the central office and the type of ADSL service subscribed to. Also, if other USB devices are attached to your computer sharing the fixed bandwidth of USB controller, the performance of the USB modem will be slightly influenced and thus effects the actual speed.

- Software upgradeable.
- Support for PPP over Ethernet (PPPoE).
- Includes a Microsoft Windows control panel monitoring program for configuring the adapter and checking the status of the connection.

1.3.1 Protocol and Device Driver Selection

ADSL modems employ ATM (Asynchronous Transfer Mode) framing. ATM is a protocol that divides packets into small fixed sized cells for rapid transmission over high-speed networks. The ATM protocol allows various types of traffic (e.g. data, voice, and video) to be securely and efficiently carried over the same network. ATM is being widely deployed by telecommunications carriers in their backbone networks.

Several different protocols are used on top of ATM. The protocol required in your configuration depends on the equipment deployed by your ADSL service provider. There are several possibilities:

- PPP (Point to Point Protocol) over ATM (RFC 2364)

PPP provides session setup, user authentication (login), and encapsulation for upper layer protocols such as IP (Internet Protocol). The use of PPP makes the modem appear as a dial-up modem to the operating system and Dial-Up Networking is used to establish a connection.

- Bridged Ethernet over ATM (RFC 1483B) / Routed IP over ATM (RFC 1483R).

  This protocol makes the modem appear as a LAN (Local Area Network) device to the operating system.

- Classical IP over ATM (RFC 1577)

  This is another LAN alike protocol for IP address and ATM address mapping.

- PPP (Point to Point Protocol) over Ethernet (RFC 2516)

  This protocol, commonly called PPPoE, allows multiple computer users on an Ethernet to share a common ADSL connection to the Internet.

For the HM121dp/di there are two types of device drivers available: WAN and LAN which both support the ATM protocol.

- **WAN driver**

  This driver causes the modem to resemble a dial-up modem. Call establishment is performed through Dial-Up Networking. This driver supports PPP over ATM (RFC 2364) with PVC connections. PPP over Ethernet (RFC 2516) is embedded into this driver.

- **LAN driver**

  This driver makes the modem appear as a LAN or Ethernet device. The connection establishment is automatic. This driver supports Bridged Ethernet over ATM (RFC 1483B) and Routed IP over ATM (RFC 1483R) with PVC connections. Classical IP over ATM (RFC 1577) is also supported by this driver.

  PPPoE is supported via third party software when implemented with a LAN driver. After installing the LAN driver, follow the installation instructions provided with the third party PPPoE software. The third party software will search for existing drivers and Internet connection will be made through the third party software. You will be required to enter your User name and Password.

1.4 Package Contents

Before installation, please check the items of your package. The package should include the following items:

- ADSL Modem HM121dp/di
- ADSL Line cable
- USB cable
- Installation CD
- Quick Installation Guide

If any of the above items is missing or damaged, please contact your ADSL modem provider.

Note:

Your package may also include other materials provided by your ADSL operator.

1.5 System Requirements

In order to successfully connect and install the HM121dp/di to your PC, please check the following requirements with your equipment:

- Pentium II 233 MHz or above
- At least 32 MB RAM (64 MB recommended)
- Microsoft Windows 98/98SE/Me/2000/XP. For Windows 98/98SE the Windows Installation CD may be required.
- 20 MB of free hard disk space.
- CD-ROM drive.
- One available USB port.

1.6 LED Indicators

There are three LED (Light Emitting Diodes) indicators located on top of the modem which indicate the ADSL connection status. These LEDs indicate the current state of the modem, and a description is provided in the table below:

LED	Status	Description
USB	On	Power On
	Off	Power off or Suspend mode
ADSL	Flashing	ADSL line is "training" to achieve the optimum transmission rate.
	Solid	ADSL link is established and ready for use.
	Off	No signal.
DATA	Flashing	Transmitting or receiving data
	Off	No data traffic

2 Installation Procedure

The step-by-step instructions in this chapter guides you through the complete installation procedure for all supported operating systems. Notes will indicate when operating system specific differences occur.

The installation procedure is divided into two steps:

- **Driver installation**;
  Installation of driver and, if required, user parameter input.
- **Connect the modem**;
  The physical cable connections.

2.1 Before You Start

Prior to installing the driver, consult with your ISP or system administrator about the connection type and collect related information. You will be prompted for these information during installation.

Connection Type	Encapsulation and Multiplexing method	Network Information
LAN	RFC 1577 Classical IPoATM	TCP/IP information:
	RFC 1483 IPoATM Bridged LLC Encapsulation	- IP address
	RFC 1483 IPoATM Bridged VC Encapsulation	- Subnet mask
	RFC 1483 IPoATM Routed LLC Encapsulation	- DNS
	RFC 1483 IPoATM Routed VC Encapsulation	- Gateway
WAN	RFC 2364 PPPoATM LLC Encapsulation	Internet Account information:
	RFC 2364 PPPoATM NULL Encapsulation	- User name
	RFC 2516 PPPoE Encapsulation	- Password

In addition you need the following information:

- Modulation (Transmission Standards): T1.413, Multimode, G.Lite or G.DMT
- The values of VPI and VCI

2.2 Driver Installation

Note:

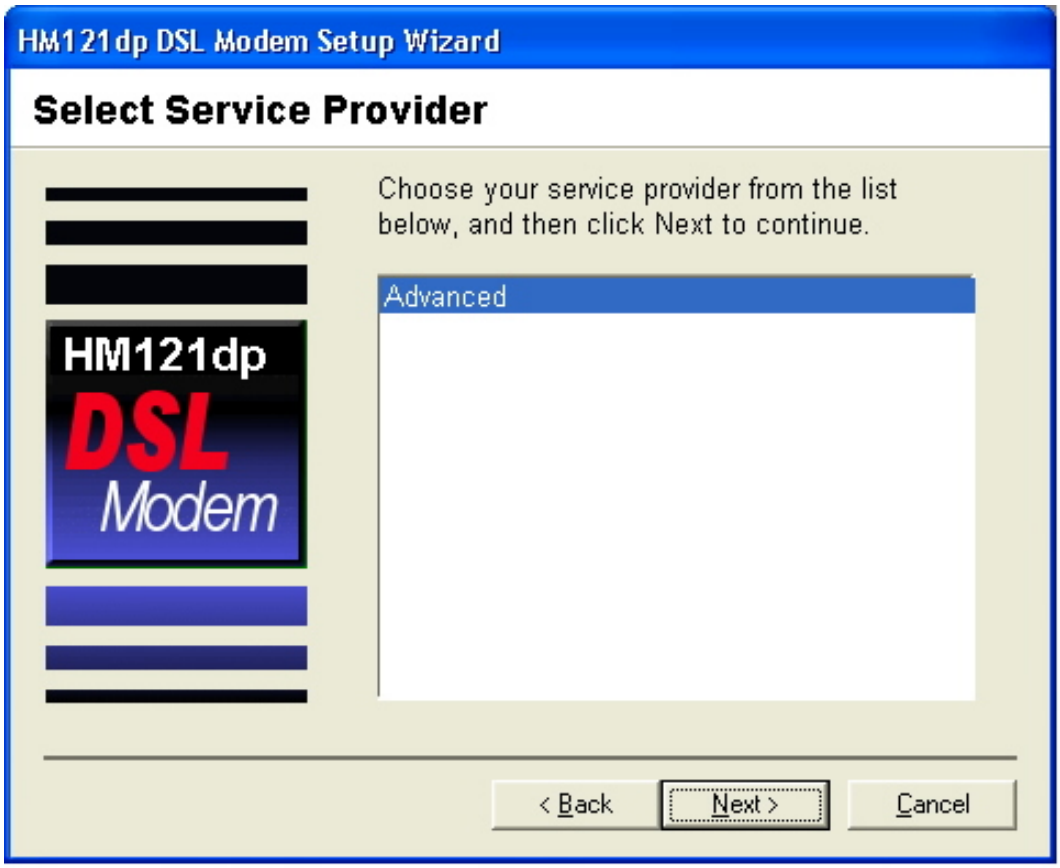
DO NOT connect any cables yet. You will be notified when to connect the modem during the installation process.

1 Close ALL Windows applications and insert the Installatioin CD into your CD-ROM drive.

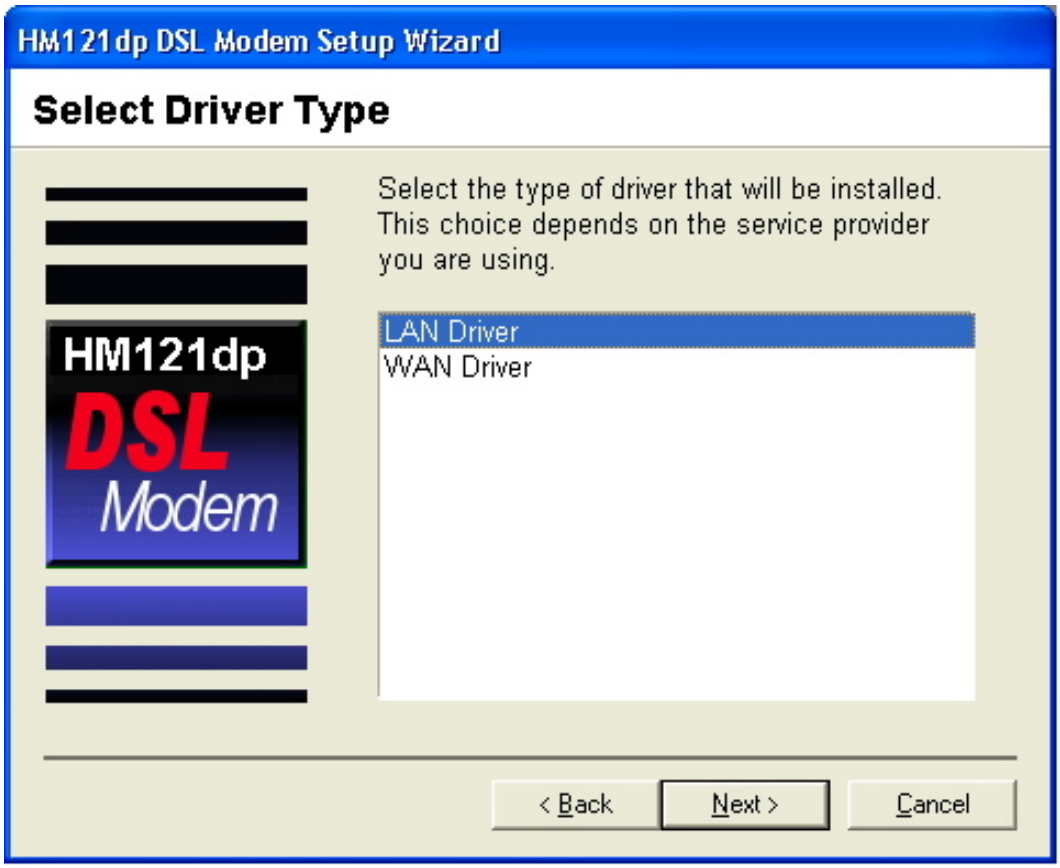
From Windows **Start** menu, select **Run** and type **D:\setup.exe** (where D: is the letter of your CD-ROM drive) and press Enter.

2 A "License Agreement" is displayed. Click **Accept** to proceed. **Decline** will exit the setup program.

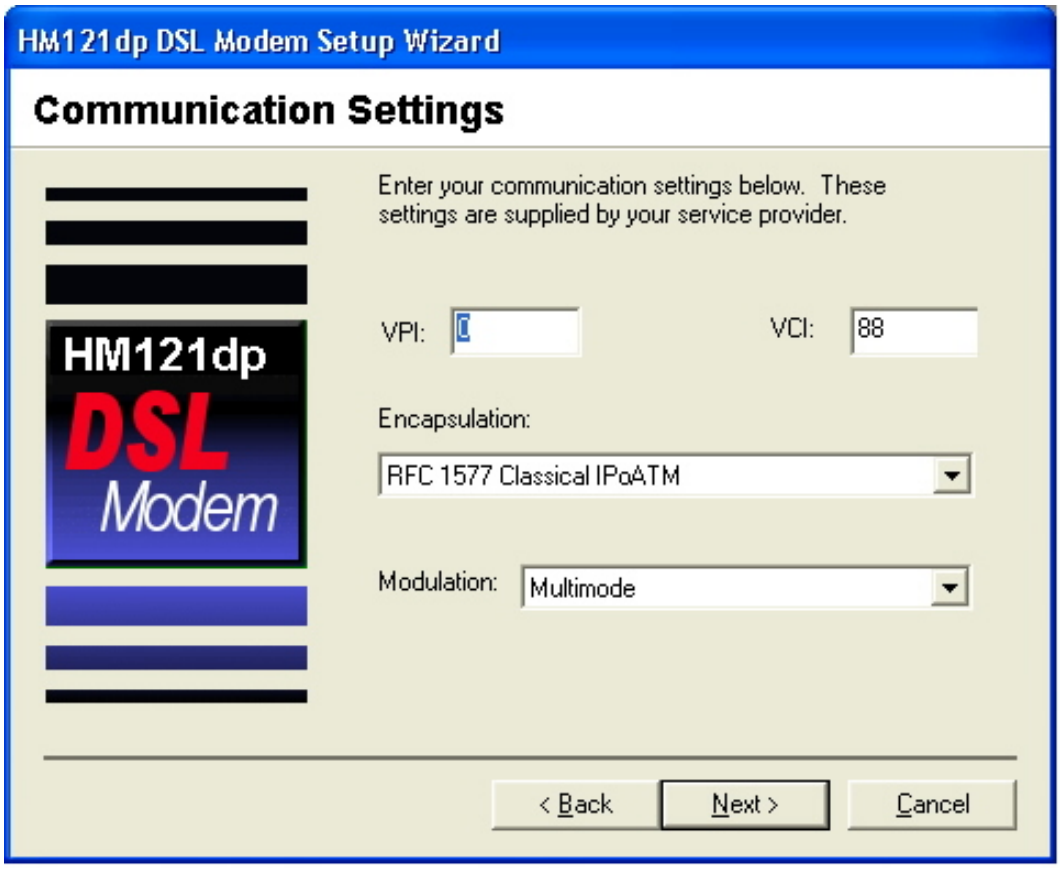
3 The "Select Service Provider" window appears. With **Advanced** selected, click **Next>** to continue.



4 The "Select Driver Type" window appears. Select the driver type and click **Next>**.



5 In the "Communication Settings" window, enter/select the **VPI**, **VCI**, **Encapsulation** and **Modulation** type. Click **Next>** to proceed.

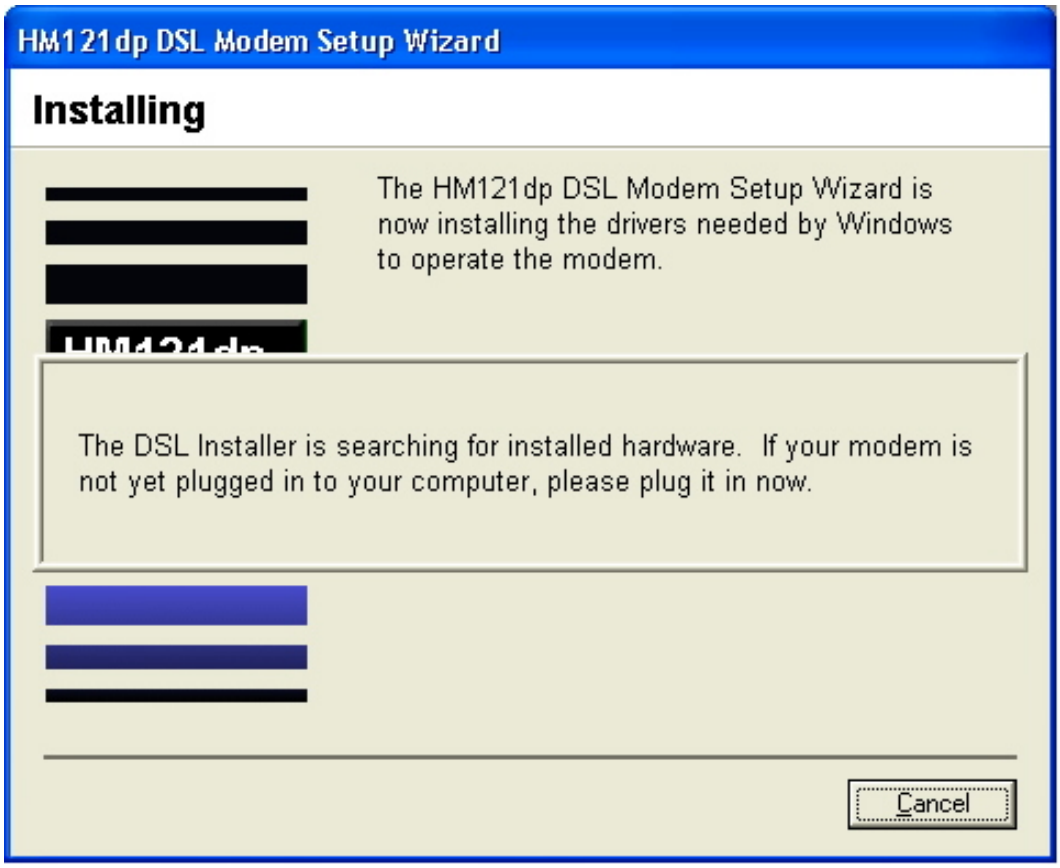


Note:

The Encapsulation types that appear in the drop-down list vary depending upon the type of driver selected in the previous step.

6 When the "Ready to Install" window appears, you may review your settings and click **<Back** to make changes or click **Next>** to accept the current settings.

7 Drivers are now being installed, and a progress bar is shown. When finished, you will be notified to connect the modem:



2.3 Connect the Modem

Connect the modem according to the following instructions:

1 Connect one end of the provided **ADSL Line cable** to the modem's **LINE** port. Connect the other end to the ADSL service port (splitter/filter or phone outlet).

2 Connect the square plug of the provided **USB cable** to the **USB** port on the back of the modem. Connect the flat plug to the USB port on your PC. This port is most likely marked with the standard USB symbol.

Important Notes on attaching other USB Devices:

If you are going to attach other USB devices, such as USB mouse, keyboard or hub, please plug them to your PC before connecting the modem. Otherwise, the pre-attached USB modem will consume a fixed bandwidth and the remaining bandwidth will not be enough for other USB devices.

If this is the case, you will se an error message warning you that the USB controller bandwidth is exceeded. The additional USB device may not function properly.

For example, your modem is attached already and you need to add an USB mouse to your PC. In this case:

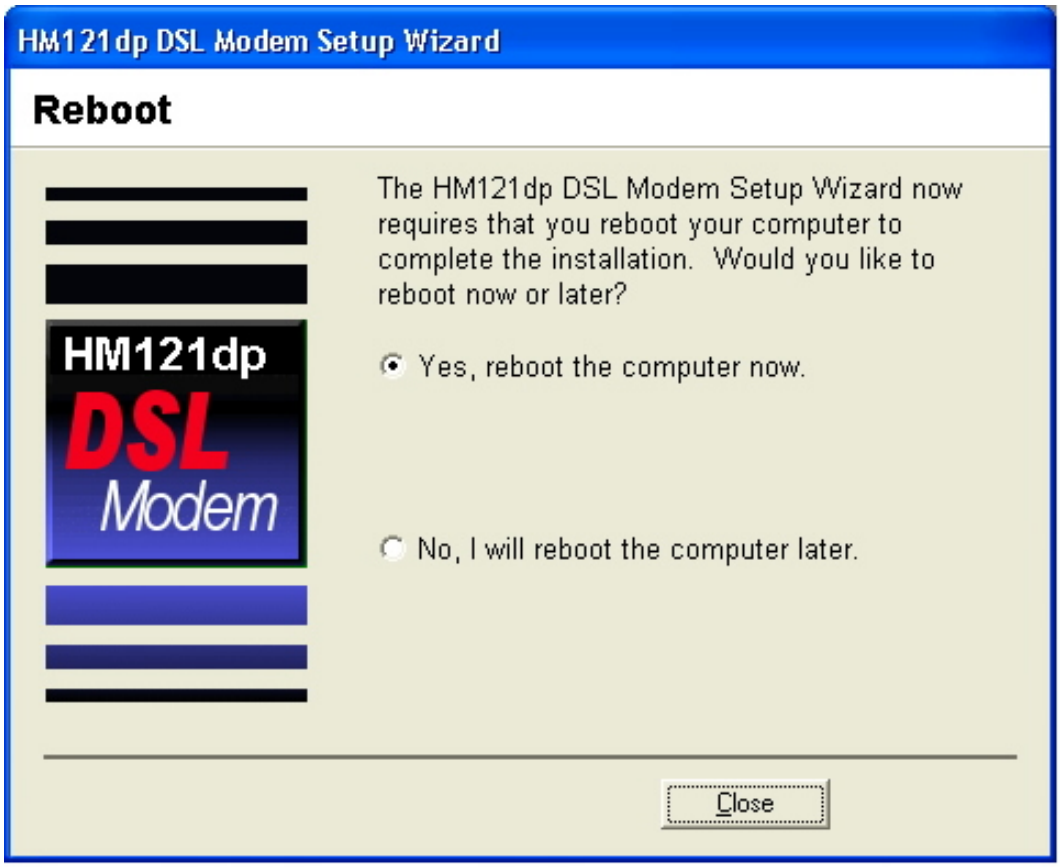
- Unplug the modem to release the bandwidth.
- Plug the USB mouse to your PC and then re-plug the modem. The modem will now adjust to use the remaining bandwidth.

3 As soon as the USB cable is connected to the PC, the "Found New Hardware" dialog is shown and the installation of the drivers proceeds.

Note:

Windows 98. At this point there may be a need for you to insert the Windows Installation CD to install some Microsoft network components. Insert the CD in the disk drive, and click OK, if prompted.

4 The system must be rebooted to have the new settings take effect, therefore the "Reboot" window appears:



5 Remove all disks from their drives, select **Yes, reboot the computer now**, and click **Close** to reboot.

2.4 Installation Program Group

The modem software installation procedure created a program group on your PC which is reached from the **Start** menu by selecting **Programs -> HM121dp/di DSL Modem**. This program group provides shortcusts to:

- **Configure** - which opens the "Communication Settings" window from which you can view and change configuration settings.
- **Uninstall** - the Uninstallation program (described in the "Uninstalling and Upgrading Modem Software" chapter).

3 Accessing the Internet

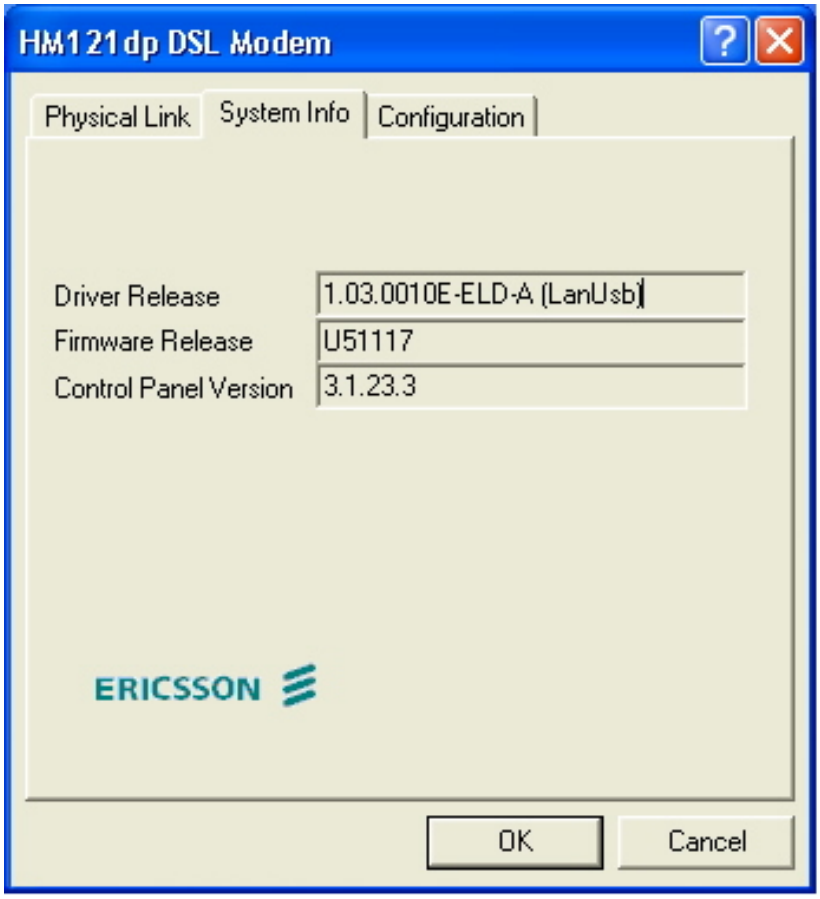
The way how to access the Internet differs depending on the settings your ADSL service provider is using.

The "Control Panel" provides information about which driver type that is used in your installation and from that information you can proceed to the respective sections in this chapter.

Follow these steps to check which driver type your modem is using:

1 Double-click on the **ADSL Modem** icon (two arrows) in the system tray to open the "Control Panel":

2 Select the "System Info" tab and read the information in the "Driver Release" field:



3 Continue reading one of the following sections depending on which driver is used.

3.1 Using LAN Driver

The LAN driver makes the modem appear as a LAN or Ethernet device and the connection establishment is automatic.

If you have not been provided any IP settings from your ISP/service provider, you can directly access the Internet by using a web browser.

If your ISP/service provider has provided you with IP settings (for instance IP address, subnet mask and default gateway), and/or explicitly stated that DHCP is not used, you have to change your PCs network configuration before you can access the Internet.

Follow the steps below to change your PCs network configuration:

3.1.1 In Windows 98, 98SE and ME

1 From the **Start** menu select **Settings -> Control Panel** and double-click on the **Network** icon.

2 Select the "TCP/IP protocol" **together** with "HM121dp/di DSL Modem" and click the **Properties** button.

3 Select the **IP Address** tab.

4 Select "Specify an IP address" and enter the IP settings provided by your ISP/service provider. Click **OK**.

5 Click **OK** in the "Network" dialog box and close the Control Panel.

6 Some configuration files may be copied to your hard disk and if a "Settings Changes" message asks you to restart your PC, you should answer **Yes**.

You are now ready to access the Internet, by using a web browser.

3.1.2 In Windows 2000

1 From the **Start** menu select **Settings -> Control Panel** and double-click on the **Network and Dial-up Connections**.

2 Double-click on the Local Area Connection icon for the "HM121dp/di DSL Modem". Be sure to choose the correct one, if you have several dial up icons.

3 Click the **Properties** button.

4 Select **Internet Protocol (TCP/IP)** and click the **Properties** button.

5 Select "Specify an IP address" and enter the IP settings provided by your ISP/service provider. Click **OK**.

6 Click **OK** in the "Local Area Connection Properties" dialog box and click **Close** in the "Local Area Connection Status" dialog box.

7 Close the "Network and Dial-up Connections" window.

You are now ready to access the Internet, by using a web browser.

3.1.3 In Windows XP

1 From the **Start** menu select **Control Panel** and

double-click on the **Network Connections** (Classic View)

or

double-click on the links **Network and Internet Connections** followed by **Network connections** (Category View).

2 Double-click on the Local Area Connection icon for the "HM121dp/di DSL Modem". Be sure to choose the correct one, if you have several dial up icons.

3 Click the **Properties** button.

4 Select **Internet Protocol (TCP/IP)** and click the **Properties** button.

5 Select "Use the following IP address" and enter the IP settings provided by your ISP/service provider. Click **OK**.

6 Click **Close** in the "Local Area Connection Properties" dialog box and in the "Local Area Connection Status" dialog box.

7 Close the "Network and Internet Connections" window.

You are now ready to access the Internet, by using a web browser.

3.2 Using WAN Driver

The WAN driver causes the modem to reassemble a dial-up modem and connection establishment is performed through Dial-Up Networking.

The WAN driver also includes support for PPPoE (Point-to-Point Protocol over Ethernet).

Follow the steps below to make a dial-up connection to access the Internet.

Note:

You have to use this method every time you want to access the Internet.

3.2.1 In Windows 98, 98SE and ME

1 Double-click on the shortcut icon **HM121dp/di Dial-up PPP Connection** on your PCs desktop to open the "Connect To" window. Now, proceed to step 5.

If you do not have the shortcut icon on your desktop, proceed to step 2.

2 Double-click on the icon **My Computer** on your PCs desktop to open the window "My Computer".

3 Double-click the **Dial-Up Networking** icon to open the "Dial-Up Networking" window.

4 Double-click the dial-up icon for **HM121dp/di DSL Modem** to open the "Connect To" window.

5 Enter your "User name" and "Password" provided by your ISP/service provider. You may check the "Save password" box to have the system remember your credentials for future use. Then click the **Connect** button.

DO NOT change the values in the "Phone number" box which indicates the VPI/VCI values for establishing an ADSL connection

Note:
Be sure to enter your User name and Password exactly as provided, that is, distinguish between uppercase and lowercase letters.

6 When a connection has been established, you should be ready to access the Internet. You may start your application, e.g. a web browser or E-mail application for Internet access.

When you want to disconnect, double-click on the **Modem Connection** icon (showing two PCs connected to each other) in your PCs system tray. In the "Connected to ..." window that opens, click the **Disconnect** button. Shutting down your PC will also disconnect your dial-up connection.

3.2.2 In Windows 2000

1 Double-click on the shortcut icon **HM121dp/di Dial-up PPP Connection** on your PCs desktop to open the "Connect To" window. Now proceed to step 3.

If you do not have the shortcut icon on your desktop, proceed to step 2.

2 From the **Start** menu select **Settings -> Network and Dial-up Connections -> HM121dp/di DSL Modem**.

Note:
If you are prompted for "Location Information", enter your area code and then exit the dialog box.

3 Enter your "User name" and "Password" provided by your ISP/service provider. You may check the "Save password" box to have the system remember your credentials for future use. Then click the **Dial** button.

Note:
Be sure to enter your User name and Password exactly as provided, that is, distinguish between uppercase and lowercase letters.

4 When a connection has been established, you should be ready to access the Internet. You may start your application, e.g. a web browser or E-mail application for Internet access.

When you want to disconnect, double-click on the **Modem Connection** icon (showing two PCs connected to each other) in your PCs system tray. In the "Connected to ..." window that opens, click the **Disconnect** button. Shutting down your PC will also disconnect your dial-up connection.

3.2.3 In Windows XP

1 Double-click on the shortcut icon **HM121dp/di Dial-up PPP Connection** on your PCs desktop to open the "Connect To" window. Now proceed to step 3.

If you do not have the shortcut icon on your desktop, proceed to step 2.

2 From the **Start** menu select **Control Panel** and double-click on the **Network Connections** (Classic View)

or

double-click on the links **Network and Internet Connections** followed by **Network Connections** (Category View).

3 Enter your "User name" and "Password" provided by your ISP/service provider. You may check the "Save password" box to have the system remember your credentials for future use. Then click the **Dial** button.

Note:

Be sure to enter your User name and Password exactly as provided, that is, distinguish between uppercase and lowercase letters.

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4 When a connection has been established, you should be ready to access the Internet. You may start your application, e.g. a web browser or E-mail application for Internet access.

When you want to disconnect, double-click on the **Modem Connection** icon (showing two PCs connected to each other) in your PCs system tray. In the "Connected to ..." window that opens, click the **Disconnect** button. Shutting down your PC will also disconnect your dial-up connection.

4 Verifying your ADSL Connection

When the installation procedure has been completed, you can use the Control Panel to view the current modem status regarding performance and ADSL connection.

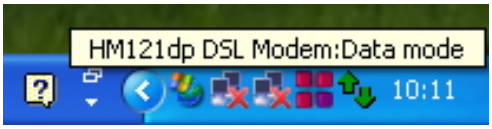
4.1 Using the ADSL Modem icon

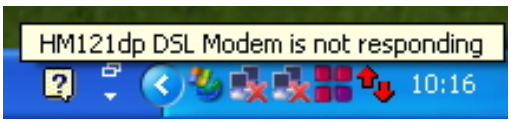
During driver installation, an ADSL Modem monitoring program is also installed on your system. Whenever you start Windows, the utility is launched automatically with its icon loaded in your system tray to indicate whether the physical connection between your USB modem and the ISP is up or down:

If the ADSL Modem icon does not appear in your system tray, you can manually start the utility by double-clicking the ADSL Modem HM121dp/di icon in the Control Panel. This opens the Modem Control Panel and launches the utility icon at the same time.

The ADSL Modem icon consists of two arrows. The upward arrow indicates data is being transmitted whereas the downward arrow indicates data is being received. The arrows are flashing yellow alternatively to indicate that trianing is in progress.

To identify the connection status, you can also move the cursor over the icon to see the pop-up text as the following examples:





The physical link over the ADSL line is essential before you make a connection to your ISP or corporate networks. If your ADSL connection fails, contact your ISP or system administrator for troubleshooting.

4.2 Using the Modem Control Panel

When your ADSL session is active, you can view specific information on your ADSL link. Double-click on the ADSL Modem icon (two arrows) in the system tray to open the Control Panel.

The Modem Control Panel consists of three tabs as described in the following sections.

4.2.1 Physical Link

The "Physical Link" tab of the Control Panel views the current state of the modem and the ADSL connection, as shown in the example below. When this window is open, the information is updated every 2 seconds.

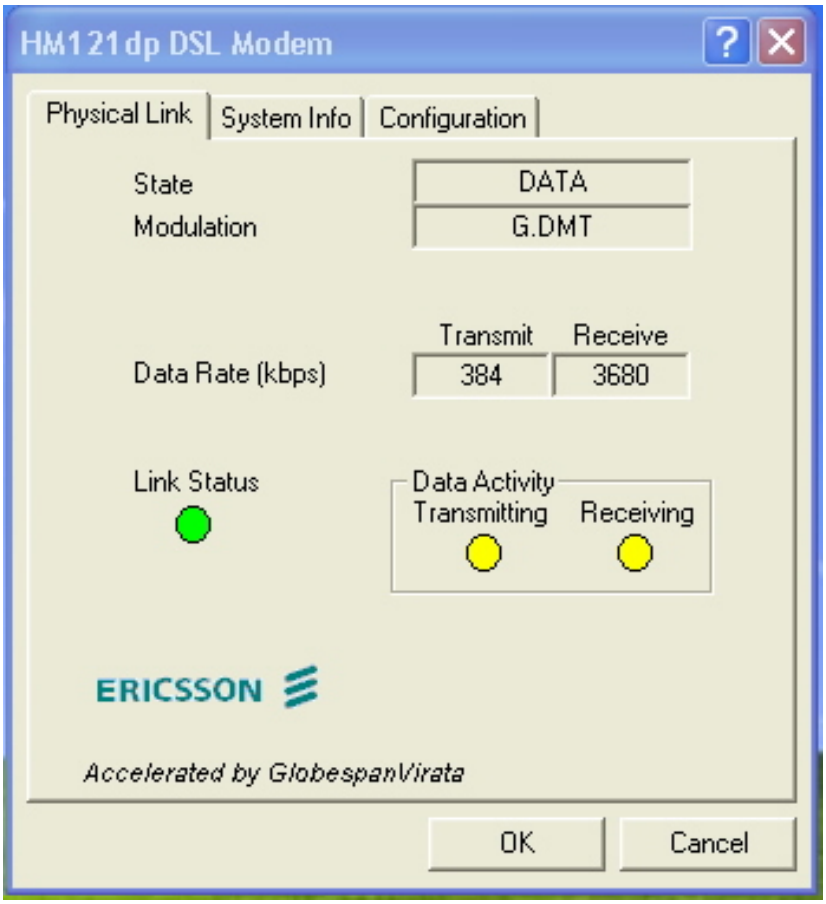


Figure 17: Control Panel - Physical Link tab

State indicates TRAINING when the ADSL line is "training" to achive the optimum transmission rate. Once the line is trained the indication is changed to DATA. When no ADSL signal is present the indication is NO SIGNAL.

Modulation shows the ADSL mode used. The setting is determined by the service offered by your ADSL service provider and is normally either T1.413, G.Dmt or G.Lite.

Data Rate(kbps) shows the transmission rate. The value for "Transmit" shows the speed (kbps) from your computer to the ISP/service provider (uploading), while the value for "Receive" shows the speed from the ISP/service provider to your computer (downloading).

The indicator (circle) below **Link Status** blinks green when the ADSL line is "training" to achieve the optimum transmission rate, and turns solid green when the line is trained and ready for use. Individual flashing yellow indicators show the "Data Activity" separately.

4.2.2 System Information

The "System Info" tab includes information about the release number of the modem driver and firmware as well as the version of the Control Panel.

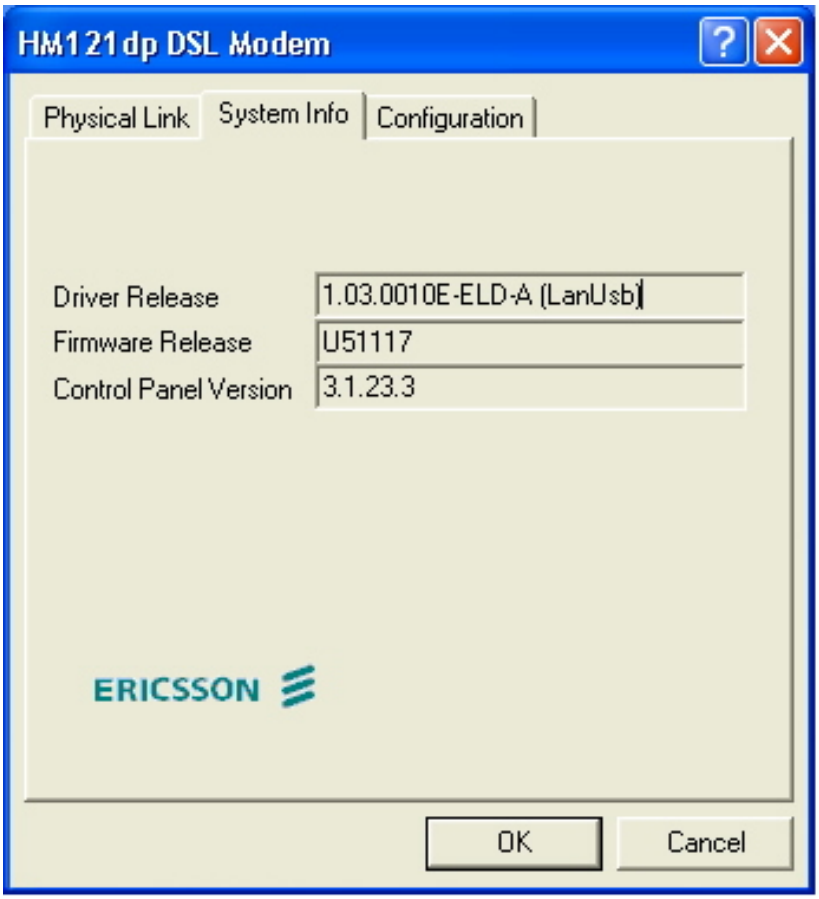


Figure 18: Control Panel - System Info tab

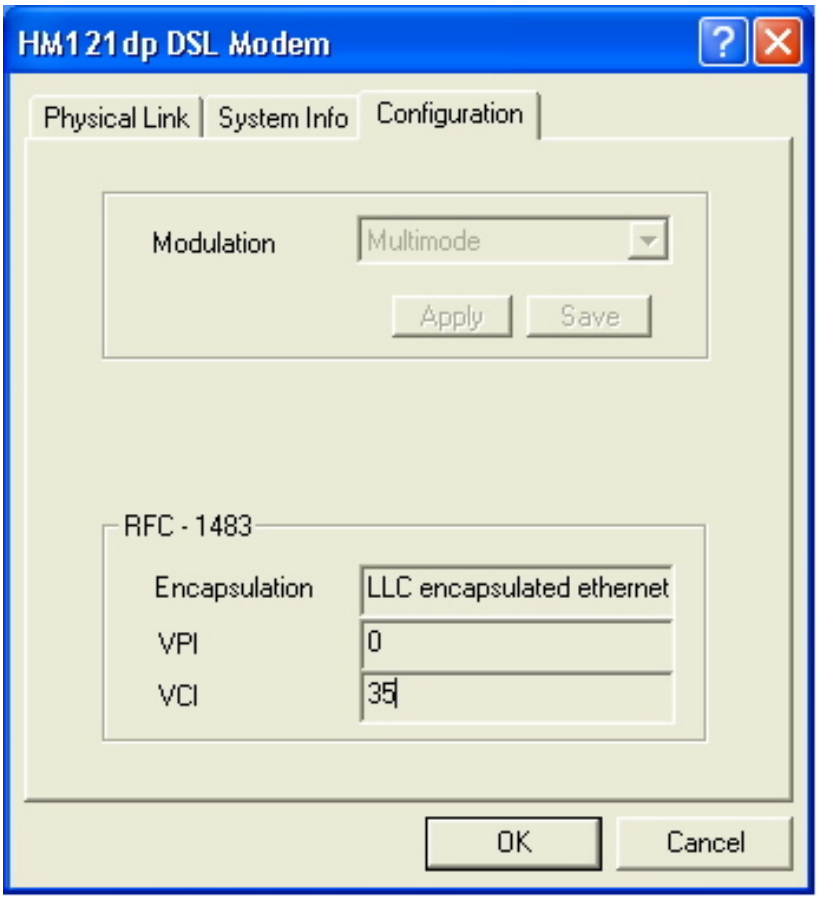
4.2.3 Configuration

The "Configuration" tab of the Control Panel views communication settings for your modem.

Note:

The information displayed on the "Configuration" tab differs depending on which driver type that is used in your installation.

When using the LAN driver, you are able to view the Encapsulation type and VPI/VCI values as shown in the example below:



If you are using the WAN driver, only the Modulation type will be displayed.

5 Customizing Communication Settings

Once the ADSL Modem HM121dp/di and software have been installed, the communication settings may be easily updated by performing the following steps.

Note:

The communication settings should only be changed if you have received new information from your ADSl service provider

1 From your PC desktop click **Start -> Programs -> HM121dp/di DSL Modem -> Configure**.

2 The "Communication Settings" window appears:

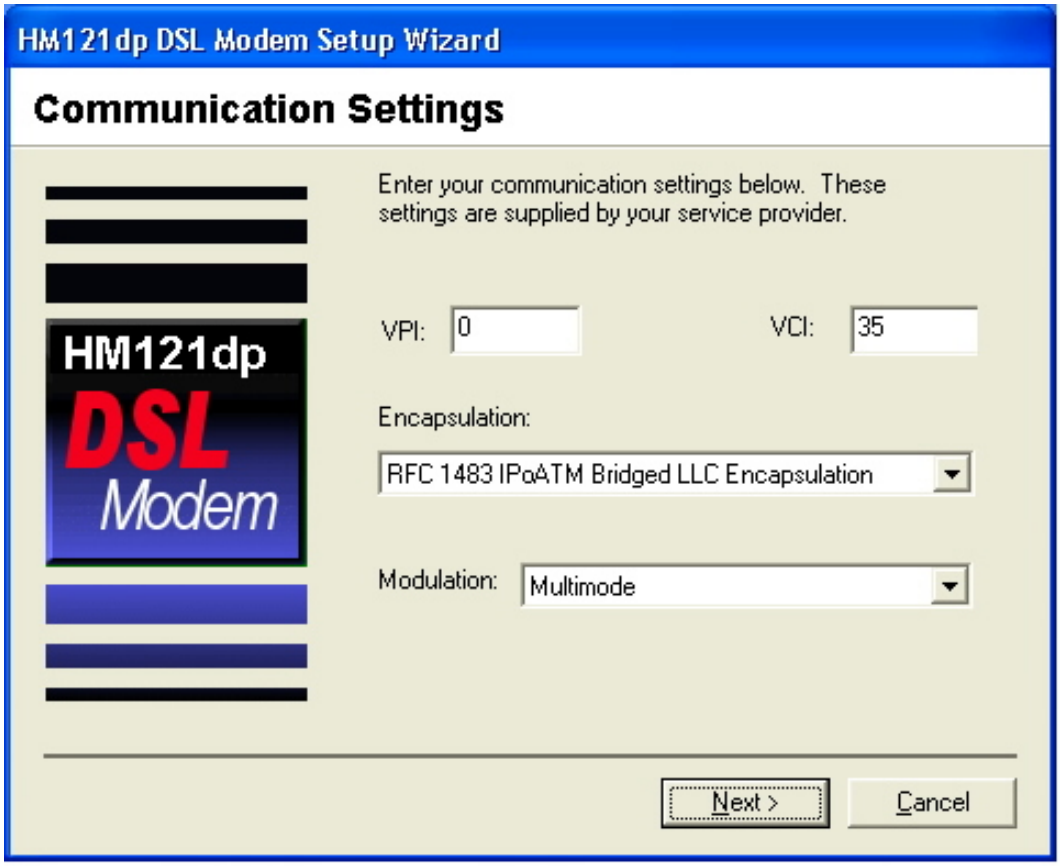


Figure 20: Communication Settings

Note:

The settings displayed in the "Communication Settings" window differs depending on which driver type that is used in the installation (in the above example, the LAN driver is used). The possibilities to change specific settings might also have been disabled by your ADSL service provider.

3 Make the necessary changes to the **VPI**, **VCI**, **Encapsulation type** and/or **Modulation Type** and click the **Next>** button.

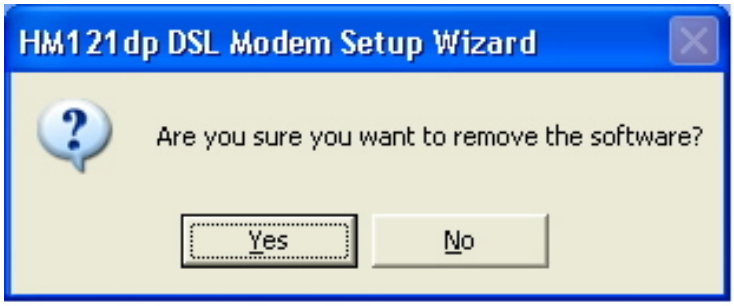
4 The system must be rebooted to have the new settings take effect, therefore the "Reboot" window will appear. Remove all disks from their drives, select "Yes, reboot the computer now" and click **Close** to reboot.

6 Uninstalling and Updating Modem Software

6.1 Software Uninstall

The HM121dp/di is a hot swapable USB device. You may plug it in and out without powering down your computer. However, this does not mean that both driver and software are removed when plugging out the USB device. Should you need to remove the HM121dp/di driver and software, follow the steps below:

1 Click the **Start** menu, select **Programs -> HM121dp/di DSL Modem -> Uninstall**. A message is displayed, asking you to confirm the removal of the modem software:

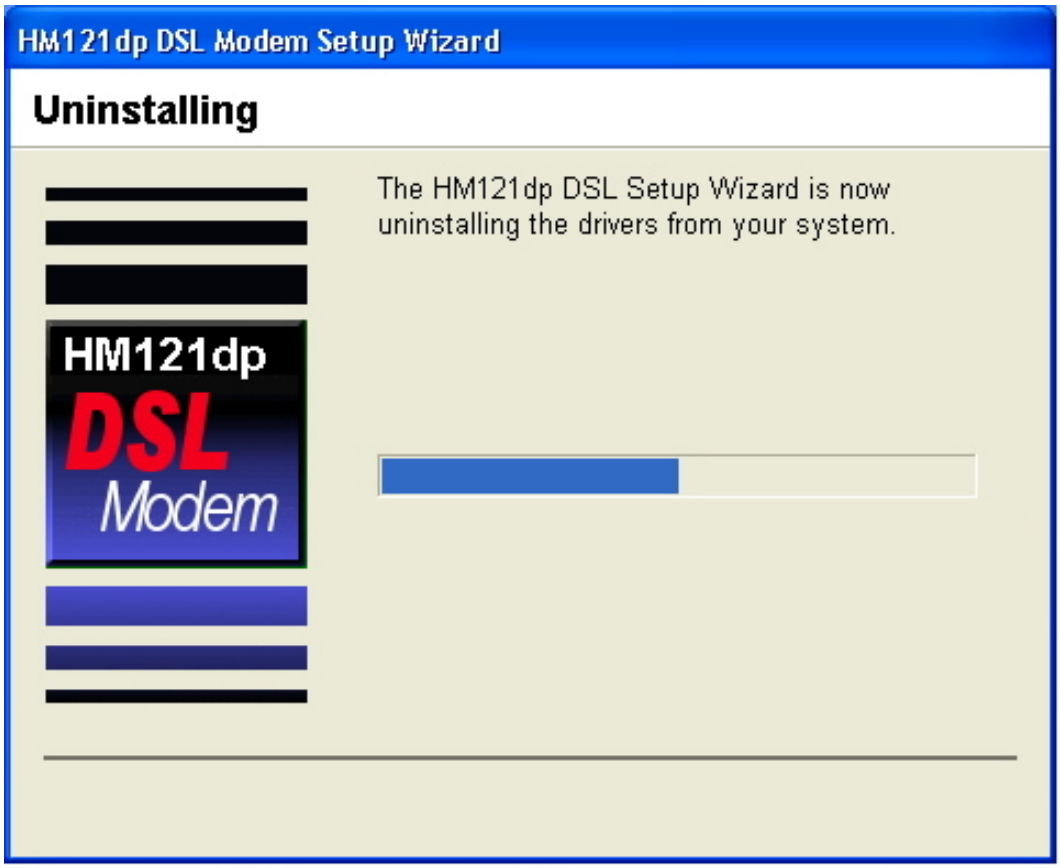


Click the **Yes** button to proceed with the uninstallation.

2 A notification message appears as the following picture:

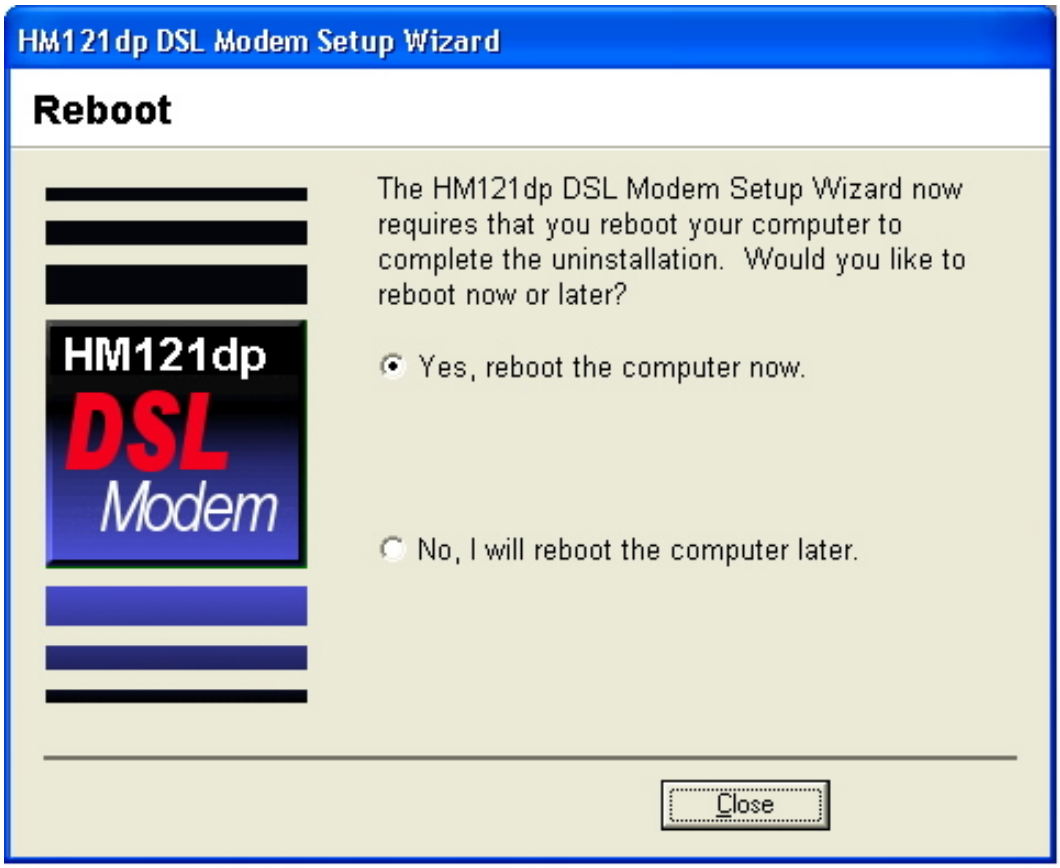
Click **OK** to start the uninstallation.

3 The uninstallation now starts and a progress bar is displayed during the process:



4 When the below notification message appears, unplug the modem from your PC and click **OK**.

5 The system must be rebooted to have the new settings take effect, therefore the "Reboot" window appears:



6 Remove all disks from their drives, select **Yes, reboot the computer now**, and click **Close** to reboot.

Note:
The USB cable must be unplugged before the system is rebooted.

6.2 Updating Modem Software

Once the HM121dp/di has been installed, updating to a new version of the software is an easy process. Simply uninstall the existing drivers as described in the previous section and then install the new drivers as described in the "Installation procedure" chapter in this manual or in the provided Quick Installation Guide.

Note:

Before you uninstall the driver, view the current configuration via **Start -> Programs -> HM121dp/di DSL Modem -> Configure**. Write down your modem settings, e.g. VPI/VCI values, encapsulation, etc. You will need to provide these information when installing the new driver.

7 Troubleshooting

This chapter provides some tips and solutions for resolving some of the problems that might encounter while installing or using your modem.

7.1 The USB Cable Connected First

If the USB cable is connected between the modem and the PC before the Installation CD is inserted, the "Add/Found New Hardware Wizard" will start indicating that new drivers are required. If this is the case, follow the steps below:

1 Disconnect the USB cable from the PC.

2 Click **Cancel** in the "Add/Found New Hardware Wizard" window to exit the wizard.

3 Remove and insert the Installation CD again to start the modem installation procedure.

7.2 The Modem is not Detected by Your System

If the installation procedure fails due to that the modem cannot be detected by your system, try the following:

Cause	Solution
The modem is not connected properly to the USB port, the USB port may be faulty or the modem is not installed properly.	Check that the modem and the USB cable are connected properly to the USB port. Disconnect the USB cable from the modem, wait for some seconds before reconnecting it. Restart the computer. If possible, verify that the USB cable is not faulty by connecting it to another USB device. Remove the previous installation (uninstall), disconnect the USB cable and reinstall the modem according to instructions in the "Installation Procedure" chapter or in the provided Quick Installation Guide.

7.3 Checking Modem Status

By observing the LEDs on your modem you can check if the device is functioning properly according to the table below:

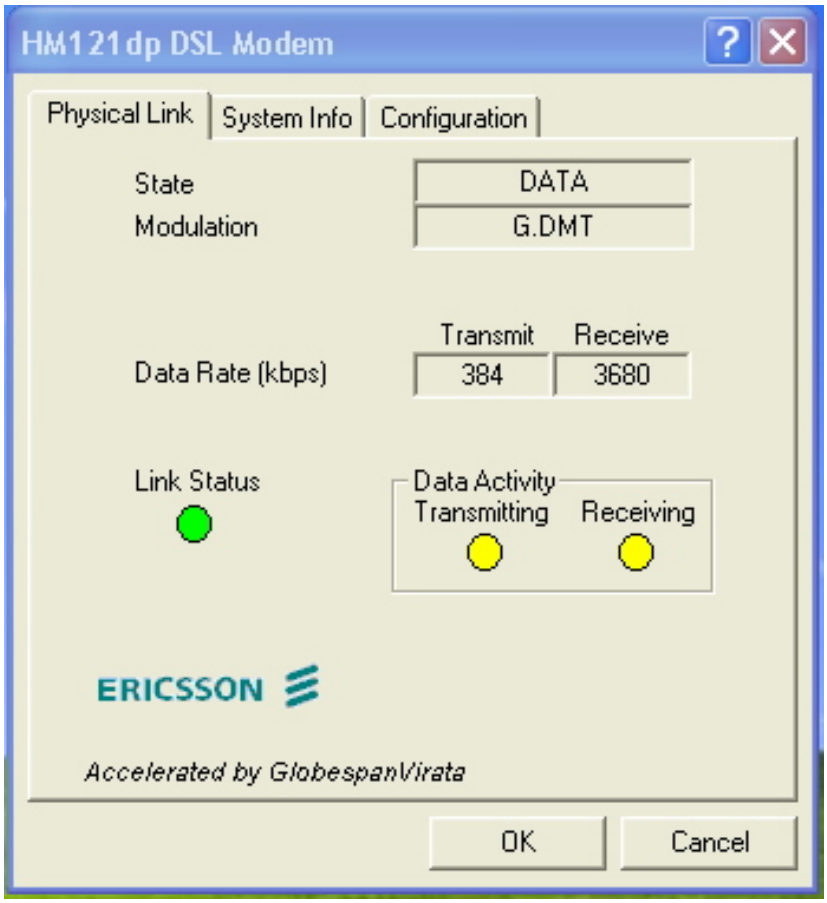
LED	Status	Description
USB	On	Power On
	Off	Power off or Suspend mode
ADSL	Flashing	ADSL line is "training" to achieve the optimum transmission rate.
	Solid	ADSL link is established and ready for use.
	Off	No signal.

LED	Status	Description
DATA	Flashing	Transmitting or receiving data
	Off	No data traffic

The Control Panel can also be used to view the current state of the ADSL connection. Follow the steps below to access the Control Panel:

1 Double-click on the ADSL Modem icon (two arrows) in your PC's system tray.

2 When the Control Panel windows appears, select the "Physical Link" tab:



State indicates TRAINING when the ADSL line is "training" to achieve the optimum transmission rate. Once the lines is trained the indication is changed to DATA. If no ADSL signal is present the indication is NO SIGNAL.

8 Important Information

8.1 Product Care and Maintenance

Note:

This is guidelines for safe and efficient use. Read this information before using your Ericsson ADSL Modem HM121dp/di.

Your ADSL Modem HM121dp/di is a highly sophisticated electronic device. To get the most out of your modem, be sure to read the following text about product care, safety and efficient use.

Do not expose the product to liquid or moisture.

Do not expose the product to extreme temperatures, neither hot nor cold.

Do not expose the product to lit candles, cigarettes, cigars, open flames, etc.

Do not drop, throw or try to bend the product. Rough treatment may damage the product.

Do not attempt to disassemble your product; the warranty is no longer valid if the warranty seal has been broken. The product does not contain consumer serviceable components. Service should only be performed by Certified Service Centres.

Do not allow children to play with the modem as it contains small parts that could be detached and create a choking hazard.

Avoid using this telephone equipment during an electrical storm. There may be a remote risk of electric shock from lightning.

Use only original Ericsson components and replacement parts. Failure to do so may result in performance loss, damage to the product, fire, electric shock or injury, and will invalidate the warranty.

Treat the product with care, keep it in an clean and dust free place. Use only a soft, damp cloth to clean the product.

8.2 Licence Agreement

This is a legal agreement, Agreement, between you Licensee, the recipient of the enclosed Software in modem, on compact disc, diskette or any other media and any upgrades thereof, and Ericsson AB, the Vendor. By opening the sealed software package and/or using the software you are agreeing to be bound by the terms of this Agreement.

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Except for the above express limited warranties, Vendor and its suppliers make and you receive no warranties or conditions either express, implied, statutory or otherwise and Vendor and its suppliers specifically disclaim any implied warranties of merchantability and fitness for a particular purpose. Vendor does not warrant that the Software will be uninterrupted or error free. You assume the responsibility for the selection of the program and hardware to achieve your intended results; and for the installation, use and results obtained from the Software.

Some jurisdictions do now allow limitations on duration of an implied warranty, so the above limitation may not apply to you.

8.2.4 Intended Use

The Software shall be used in accordance with the instructions and for its intended use and purpose only. The software or part of it is not permitted to be used in form example life support systems, nuclear facility applications, missile technology, chemical or biologized industry or of flight navigation or communication of air, ground support equipment or other similar business, if failure to perform on behalf of the software in any way, could result in personal injury, death, damage to tangibles or environmental damage.

8.2.5 Limitation of Liability

If no event shall Vendor or its suppliers be liable for any indirect or consequential losses or damages whatsoever including loss of data, loss of business, loss of profits, business interruption or personal injury arising out of the use of or inability to use this Software. Vendor and its suppliers entire liability under this Agreement shall be limited to the amount actually paid by Licensee for the Software.

8.2.6 Governing Law

The validity, construction and performance of this Agreement shall be governed by the laws of Sweden.

8.3 Regulatory Information

8.3.1 Europe

8.3.1.1 Declaration of Conformity

ERICSSON

Attending to this matter, name	Date	Rev	Our Reference
EAB/RJX/R Anders Svensson	2003-03-14	A	174 01- ZAT 75976/xxxx

DECLARATION OF CONFORMITY

We, Ericsson AB, hereby declare that the product below, to which this Declaration of Conformity relates, are in compliance with the following EC Directive and Product Standards or other Normative Documents listed on next page.

- 73/23/EEC, Low Voltage Directive (LVD).
- 89/336/EEC, Electromagnetic Compatibility Directive (EMC)
- 1999/5/EC, Radio Equipment and Telecommunications Terminal Equipment Directive (R&TTE).

Type of product:	ADSL USB Modem
Brand name:	HM121dp, HM121di
Product numbers:	ZAT 759 76/xxxx
Intended use:	Provide high-speed Internet access over either existing phone line or ISDN line services. For public and private use.

Linköping 2003-03-14

.....

Anders Lindström
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ERICSSON

Page 2 (2)

Attending to this matter, name
EAB/RJX/R Anders Svensson

Date
2003-03-14

Rev
A

Our Reference
174 01- ZAT 75976/xxxx

1. PRODUCT SPECIFICATIONS

The ADSL USB Modem HM121dp/HM121di conforms to the following Product Specifications, Harmonised Standards and/or Technical Specifications:

R & TTE – Transmission	Acc. To 1999/5/EC Directive
EMC	EN 300 386:2000 EN 55022:1998 Class B EN 55024:1998 EN 61000-3-2:2000 EN 61000-3-3:1995
LVD – Safety	IEC 60950, 2ed :1991 +A1-A4

2. REFERENCES

174 53-ZAT 759 76 Technical File HM121dx

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8.3.2 USA

The Ericsson ADSL Modem HM121dp/di is cULus approved according to UL 1950 and also to FCC Part 15 and Part 68 as described in the following sections.

Note:

This information is only applicable for units sold for the U.S. market.

8.3.2.1 UL Required Information

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1 Do not use this product near water, for example, near a bathtub, washbowl, and kitchen sink or laundry tub, in a wet basement or near a swimming pool.

2 Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

3 Do not use the telephone to report a gas leak in the vicinity of the leak.

CAUTION! To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

CAUTION! Always disconnect all telephone lines from the wall outlet before servicing or disassembling this equipment. For use only with UL Listed Personal Computer.

8.3.2.2 FCC Required Information

8.3.2.2.1 FCC Part 15

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules (Code of Federal Regulations Title 47, Telecommunications (CFR 47)). These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio or television reception. However, there is no guarantee that interference will occur in a particular installation. If this equipment does cause harmful interference to radio or television, which can be determined by turning the equipment off and on, the user is encouraged to eliminate the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna of the affected equipment.
- Increase the separation between the ADSL Modem HM121d and the affected equipment.
- Connect the ADSL Modem HM121d power supply to an outlet on a circuit different from that to which the affected equipment is connected.

- Consult your service provider or an experienced radio/TV technician for help.

ASKEY COMPUTER CORP.

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Chung-Ho, TAIPEI, TAIWAN, R.O.C.
E-MAIL: support@askey.com.tw

http://www.askey.com.tw
FAX: 886-2-32349340
TEL: 886-2-22287588

Declaration of Conformity (DoC)

Authorized according to 47 CFR.Part2 and Part 15 of the FCC Rules

The following equipment:

Product Name: ADSL USB Modem
Trade Name: Ericsson
Model Number: HM121dx

is herewith confirmed to comply with the requirements of FCC Part 15 Rules.
The operation is subject to the following two conditions:
(1)This device may not cause harmful interference, and
(2)This device must accept any interference received, including interference that may cause undesired operation.

The result of electromagnetic emission has been evaluated by SPORTON INTERNATIONAL INC. and showed in the test report:

D290306

It is understood that each unit marketed is identical to the device as tested, and any change to the device which could adversely affect the emission characteristics will require retest.

The following importer / manufacturer is responsible for this declaration:
Company Name : Askey International Corp.
Company Address : 1751 Yeager Ave,La Verne, CA 91750, USA
Telephone : 909-596-5180 Facimile : 909-596-5801

Person is responsible for making this declaration:

Name : Dee Huang Dee Huang
(Signature)

Title : President

Date : 25 March 2003

8.3.2.2.2 FCC Part 68

The Federal Communications Commission (FCC) has established Rules which permit this device to be directly connected to the telephone network. Standardized jacks are used for these connections. This equipment should not be used on party lines or coin phones.

If this device is malfunctioning, it may also be causing harm to the telephone network; this device should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.

The telephone company may make changes in its technical operations and procedures; if such changes affect the compatibility or use of this device, the telephone company is required to give adequate notice of the changes. You will be advised of your right to file a complaint with the FCC.

If the telephone company requests information on what equipment is connected to their lines, inform them of:

- The telephone number to which this unit is connected.
- The USOC jack required.
- The FCC Registration Number (indicated on the label).

The Ringer Equivalence Number (REN). Note that if several devices are connected on the same line, the RENs must not add up to more than 5.0. This REN figure is important to your telco and can be found on the equipment's FCC compliance label.

In case of operational problems, disconnect your unit by removing the modular or multi-connector plug from the telco's jack. If your regular phone still works properly, your modem has a problem and must remain disconnected and (officially) serviced or returned for repairs. If upon the above disconnection your regular phone still has problems, notify your telco that they may have a problem. If problem is still found in premises wiring not telco-installed, you are subject to a service charge. If a fault is found in telco-installed wiring, you may still be subject to a service call charge.

Unless otherwise noted in the User's Manual (e.g. fuses, etc), user may not under any circumstances (in our out of warranty) attempt any service adjustment, or repairs on this unit. It must be returned to the factory or authorized U.S. service agency for all such work. Locations and phone number orf factory or authorized U.S. service points are as following:

Company: ASKEY International Corp.

Address: 1751 Yeager Ave, La Verne, CA 91750, USA

Tel: 909-596-5180

8.3.3 Caution

Changes or modifications to this product not autorized by te manufacturer could void your authority to operate the equipment and invalidate approvals.

8.3.4 Environmental Information

Maximum environmental values during use:

- Temperature: 0oC to +40oC
- Humidity: 5% to 85% RH, non-condensing.

8.3.5 Intended Use

The HM121dp/di is intended for indoor public and private use.

Glossary

ADSL

Short for *Asymmetric Digital Subscriber Line*, a technology that allows more data to be sent over existing copper telephone lines (POTS). ADSL support data rates of fromm 1.5 to 9 Mbps when receiving data (known as the downstream rate) and from 16 to 640 Kbps when sending data (known as the upstream rate).

ATM

Short for *Asynchronous Transfer Mode*, a network technology based on transferring data in cells or packets of a fixed size. The cell used with ATM is relatively small compared to units used with older technologies. The small, constant cell size allows ATM equipment to transmit video, audio, and computer data over the same network, and assure that no single type of data hogs the line.

Device

Any machine or component that attaches to a computer. Examples of devices include disk drives, printers, mice, and modems.

DHCP

Short for *Dynamic Host Configuration Protocol*, a protocol for assigning dynamic IP addresses to devices on a network. With dynamic addressing, a device can have a different IP address every time it connects to the network. In some systems, the device's IP address can even change while it is still connected. Many ISP's use dynamic IP addressing for dial-up users.

Downstream

The direction of a downstream signal is from the ISP/service provider to the user's computer (downloading).

DSL

Short for *Digital Subscriber Line*, which is a data communications technology that transmits information over the existing copper telephone lines (POTS). DSL takes existing voice cables that connect customer premises (CPE) to the phone company's central office (CO) and turns them into a high-speed digital linke. There are many types of DSL and ADSL is one of them.

DSLAM

Short for *Digital Subscriber Line Access Multiplexer*, a mechanism at a phone company's central location that links many customer DSL connections to a single high-speed ATM line.

When the phone company receives a DSL signal, an ADSL modem with a POTS splitter detects voice calls and data. Voice calls are sent to the PSTN, and data re sent to the DSLAM, where it passes through the ATM to the Internet, then baack through the DSLAM and ADSL modem before returning to the customer's PC.

Firmware

Software (programs or data) that has been written onto read-only memory (ROM). Firmware is a combination of software and hardware.

G.dmt

A kind of asymmetric DSL technology, based on DMT modulation, that offers up to 8 megabits per second downstream bandwidth, 1.544 Megabits per second upstream bandwidth. "G.dmt" is actually a nickname for the standard officially known as ITU-T Recommendation G.992.1.

G.lite

A kind of asymmetric DSL technology, based on DMT modulation, that offers up to 1.5 megabits per second downstream bandwidth, 384 Kilobits per second upstream, does not usually require a splitter and is easier to install than other types of DSL. "G.lite" is a nickname for the standard officially known as G.992.2.

IP address

An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255. For example, 1.160.10.240 could be an IP address.

ISP

Short for *Internet Service Provider*, a company that provides access to the Internet.

LAN

Short for *Local Area Network*, a computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings and connect workstations and personal computers. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN).

There are many different types of LANs, where Ethernet being the most common for PCs.

LED

Short for *Light Emitting Diode*, a type of control lamp on devices that indicates the status of a device.

Password

A secret series of characters that enables a user to access a file, computer, or program. On multiuser systems, each user must enter his or her password before the computer will respond to commands.

POTS

Short for *Plain Old Telephone Service*, which refers to the standard telephone service that most homes use. The POTS network is also called the Public Switched Telephone Network (PSTN).

PPP

Short for *Point-to-Point Protocol*, a method of connecting a computer to the Internet. PPP sends the computer's TCP/IP packets to a server that puts them onto the Internet.

T1.413

The American National Standards Institute (ANSI) standard for asymmetric digital subscriber line using discrete multitone modulation, which the G.dmt standard is based on.)

TCP/IP

Short for *Transmission Control Protocol / Internet Protocol*, the suite of communication protocols used to connect hosts on the Internet.

Upstream

The direction of an upstream signal is from the user's computer to the ISP/service provider (uploading).

USB

Short for *Universal Serial Bus*, an external bus standard that supports data transfer rates of 12 Mbps. A USB port can be used to connect peripheral devices, such as mice, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.

User name

A name used to gain access to a computer system. User names (and often passwords) are required in multiuser systems.

VPI and VCI

A VPI (*Virtual Path Identifier*) is an 8-bit field while VCI (*Virtual Channel Identifier*) is a 16-bit field in the ATM cell header. A VPI identifies a link formed by a virtual path and a VCI identifies a channel within a virtual path. A unique and separate VPI/VCI identifier is assigned in advance to indicate which type of cells follow.

WAN

Short for *Wide Area Network*, a computer network that spans a relatively large geographical area. Typically, a WAN consists of two or more local-area networks (LANs).